

Message Text

PAGE 01 STATE 227775

62

ORIGIN COME-00

INFO OCT-01 EUR-12 ISO-00 EB-07 /020 R

DRAFTED BY COM/BEWT/TPD/562/MGOODWIN/SB

APPROVED BY EB/ITP/EWT - HJBEMIS

COM/BEWT/TPD/OJERSCHKOWSKY

COM/BEWT/EEAD/554/MHUTCHINSON

EUR/EE - DMILLER

EUR/CE - JWARD

EUR/EE - RCHRISTENSEN

EUR/CE - SKLINGAMAN

----- 105598

P 241948Z SEP 75

FM SECSTATE WASHDC

TO AMEMBASSY BERLIN PRIORITY

INFO AMEMBASSY BUCHAREST PRIORITY

AMEMBASSY BUDAPEST

AMEMBASSY VIENNA

UNCLAS STATE 227775

E.O. 11652: N/A

TAGS: BEXP, GE

SUBJECT: CHEMICAL/PETROCHEMICAL TECHNICAL SALES SEMINARS
(TSS), DECEMBER, 1975

FOR PARKER

1. PER OUR TELEPHONE CONVERSATION TODAY PAPER ABSTRACTS
FOR TSS FOLLOW:

CHEVRON RESEARC;CO., PRODUCTION OF AROMATIC HYDROCARBONS
BY LOW PRESSURE RHENIFORMING (TITLE) AROMATIC HYDROCARBONS
ARE THE BASIC COMPONENTS IN MANY MODERN SYNTHETIC FIBERS,
DETERGENTS AND PLASTICS. MOST OF THE LARGE QUANTITIES OF
0ENZENE, TOLUENE AND XYLENE USED ARE NOW PRODUCED FROM
PETROLEUM BY REFORMING OF NAPHTHENES AND PARAFFINS OVER
CATALYST CONTAINING PLATINUM. THE SELECTIVITIES AND RELA-
UNCLASSIFIED

PAGE 02 STATE 227775

TIVE RATES OF THE VARIOUS REFORMING REACTIONS ARE DISCUSSED.
EQUILIBRIUM DATA SHOW THAT FORMATION OF AROMATICS IS
FAVORED BY REFORMING AT LOW PRESSURE, BUT LOW PRESSURE
OPERATION AGGREVATES CATALYST FOULING DUE TO CARBON FORMA-

TION. PLATINUM-ON-ALUMINA REFORMING CATALYSTS SHOW SERIOUS DECREASE IN YIELDS OF AROMATICS AND BYPRODUCT HYDROGEN AS THE CATALYSTS FOUL. THE RATIO OF HYDROCRACKING TO AROMATIZATION RATES INCREASE AS COKE BUILDS UP ON THE CATALYST.

IT HAS BEEN DISCOVERED THAT A BIMETALLIC CATALYST CONTAINING RHENIUM AND PLATINUM CAN OPERATE UNDER MUCH LOWER PRESSURES THAN PLATINUM ALONE. THIS ADVANTAGE RESULTS FROM TWO BENEFICIAL EFFECTS OF THE RHENIUM COMPONENT. IT DECREASES THE RATE OF THE COKING REACTION AND THUS MAINTAINS CATALYTIC ACTIVITY SEVERAL TIMES LONGER THAN PLATINUM-ON-ALUMINA. MOREOVER, THE PLATINUM-RHENIUM CATALYST RETAINS ITS HIGH INITIAL SELECTIVITY THROUGHOUT A RUN, EVEN AFTER LARGE AMOUNTS OF COKE HAVE DEPOSITED ON THE CATALYST. THE REMARKABLE STABILITY AND SUSTAINED SELECTIVITY OF THE RHENIUM CATALYST RESULT IN SUBSTANTIALLY HIGHER YIELDS OF AROMATICS AND HYDROGEN THAN ARE OBTAINED THROUGH THE USE OF PLATINUM-ON-ALUMINA CATALYSTS.

THE YIELDS OF AROMATICS OBTAINABLE FROM VARIOUS FEEDSTOCKS AND THE EFFECTS OF OPERATING CONDITIONS ARE DISCUSSED. NAPHTHA PRODUCED BY THE HYDROCRACKING OF HEAVY GAS OILS OR OF CATALYTIC CRACKING UNIT CYCLE OILS ARE AMONG THE PREFERRED FEED MATERIALS BECAUSE HYDROCRACKING PRESERVES RING STRUCTURES WHILE REDUCING MOLECULAR WEIGHT OF THE HEAVY OIL. REFORMING OF SUCH HYDROCRACKED NAPHTHAS GIVES HIGH YIELDS OF AROMATICS. STRAIGHT-RUN NAPHTHAS VARY WIDELY IN RING STRUCTURE CONTENT. THOSE HAVING HIGH CONTENTS OF CYCLIC COMPOUNDS ARE PREFERRED FEEDS FOR AROMATICS REFORMING. HOWEVER, MANY MIDDLE EAST NAPHTHAS, AS WELL AS RAFFINATES FROM AROMATIC EXTRACTION UNITS, ARE HIGHLY PARAFFINIC AND GIVE RELATIVELY LOW YIELDS OF AROMATICS IN REFORMING AT CONVENTIONAL PRESSURES IN THE 300-400 PSIG RANGE. AT LOW PRESSURES, THE PARAFFINS CAN BE DEHYDROCYCLIZED TO AROMATICS MORE EFFECTIVELY. THEREFORE THE INCENTIVES ARE ESPECIALLY HIGH FOR PROCESSING THESE PARAFFINIC FEEDSTOCKS IN LOW PRESSURE RHENIUM REFORMERS.

UNCLASSIFIED

PAGE 03 STATE 227775

COMMERCIAL PLANTS DEMONSTRATE THE EFFECTIVENESS OF PLATINUM-RHENIUM CATALYST TO INCREASE PRODUCTION OF AROMATICS BY OPERATION AT LOW PRESSURE. THE PERFORMANCE OF THESE COMMERCIAL UNITS IS DISCUSSED.

2. CYANAMID INTERNATIONAL, POLYACRYLATE ELASTOMERS FOR AUTOMOTIVE AND OTHER HIGH TEMPERATURE APPLICATIONS (TITLE) ADVANCING TECHNOLOGY IN THE AUTOMOTIVE AND RELATED INDUSTRIES HAS CREATED STRINGENT REQUIREMENTS FOR ELASTOMERS FOR SEALS AND OTHER COMPONENTS WHICH FUNCTION IN AIR AND OIL AT ELEVATED TEMPERATURES. HIGHER SPEEDS OF AUTOMOBILES RESULT IN HIGHER OPERATING TEMPERATURES, AND EFFORTS TO REDUCE SIZE AND WEIGHT OFTEN HAVE THE SAME EFFECT. IN

A SIMILAR FASHION MORE POWERFUL EQUIPMENT AND VEHICLES FOR OFF-HIGHWAY USE HAVE INCREASED THE SEVERITY OF EXPOSURE OF RUBBER PARTS. POLYACRYLATE ELASTOMERS ARE

IDEALLY SUITED FOR THESE HARSH CONDITIONS AND ARE BEING USED TO AN INCREASING EXTENT TO REPLACE NITRILE RUBBER IN MANY APPLICATIONS.

RECENT DEVELOPMENTS IN POLYACRYLATE ELASTOMERS HAVE IMPROVED THEIR SERVICEABILITY, AND HAVE MADE IT EASIER TO PROCESS THEM IN THE FACTORY. THESE RECENT DEVELOPMENTS ARE DESCRIBED IN THE PAPER, AGAINST A BRIEF REVIEW OF THE OLDER ART AS A BACKGROUND. THE RECENT DEVELOPMENTS INCLUDE NEW COMONOMERS THAT HAVE EXTENDED THE USEFUL LOW TEMPERATURE RANGE OF POLYACRYLATES TO -40 DEGREES, AND COMPOUNDING IMPROVEMENTS WHICH PUSH THE UPPER SERVICE TEMPERATURES TO NEARLY 200 DEGREES.

A DEVELOPMENT OF MAJOR IMPORTANCE HAS BEEN THE INTRODUCTION OF A NEW SITE FOR CROSS-LINKING. THE HIGHER ACTIVITY OF THIS NEW SITE HAS PERMITTED THE DEVELOPMENT OF NEW CURE SYSTEMS WHICH ARE VERSATILE AND PERMIT THE RUBBER CHEMIST TO EXERCISE A HIGH DEGREE OF CONTROL OVER THE VULCANIZATION TO MEET FACTORY CONDITIONS AND PRODUCTION REQUIREMENTS AS WELL AS MEETING SPECIFICATIONS FOR THE FINISHED PARTS.

UNCLASSIFIED

PAGE 04 STATE 227775

ONE OF THE NEW CURE SYSTEMS USES SULFUR AND ALKALI METAL SALTS OF FATTY ACIDS. THIS SYSTEM IS DISCUSSED IN DETAIL FOR THE INFORMATION OF RUBBER CHEMISTS AND COMPOUNDERS. THE FUNCTION OF EACH OF THE ESSENTIAL INGREDIENTS IS DESCRIBED, AS WELL AS THE EFFECT OF VARYING ITS CONCENTRATION. THIS CURE SYSTEM IS AFFECTED BY AMBIENT HUMIDITY, AND THIS PHENOMENON, AND SIMPLE MEANS FOR CONTROLLING IT, ARE DISCUSSED. REINFORCING FILLERS ARE TOUCHED ON BRIEFLY. THEIR EFFECT IS APPROXIMATELY THE SAME AS IN OTHER ELASTOMERS. SEVERAL OTHER RECENT DEVELOPMENTS IN COMPOUNDING INGREDIENTS FOR POLYACRYLATE ELASTOMERS ARE DESCRIBED.

THE PAPER CONCEDES WITH EXAMPLES OF FORMULATIONS FOR SPECIFIC AUTOMOTIVE APPLICATIONS. PROPERTIES, INCLUDING THE EFFECTS OF AGING IN AIR AND IN OIL, ARE LISTED AS AN INDICATION OF THE PERFORMANCE TO BE EXPECTED FROM MODERN POLYACRYLATES AND TO GUIDE THE AUTOMOTIVE ENGINEER IN SELECTING THIS MATERIAL FOR OTHER APPLICATIONS.

3. DIAMOND SHAMROCK CORP., ADVANCED TECHNOLOGY IN CHLORINE PRODUCTION (TITLE). RECENT DEVELOPMENTS HAVE REAWAKENED INTEREST IN DIAPHRAGM CELL TECHNOLOGY. SEVERAL MANUFACTURERS HAVE ALREADY PROFITABLY SUBSTITUTED DIMENSIONALLY STABLE ANODES AS REPLACEMENT PARTS IN COMMERCIAL DIAPHRAGM

CELLS. A NEW CONCEPT HAS RECENTLY BEEN INTRODUCED BY DIAMOND SHAMROCK WHEREIN THE DIMENSIONAL STABILITY AND

SUPERIOR OPERATING CHARACTERISTICS OF THE DSAS'S HAVE BEEN OPTIMIZED. THIS CONCEPT IS BASED ON AN ANODE WITH SELF-ADJUSTING GAP WHICH CONTROLS ANODE-CATHODE SPACING TO ALLOW OPTIMUM PERFORMANCE LEVELS. AT PRESENT, THE MAJOR OPERATIONAL WEAKNESSES IN DIAPHRAGM CELLS LIE WITHIN THE DIAPHRAGM-CATHODE AREA ITSELF. THESE DEPOSITED ASBESTOS DIAPHRAGMS ARE SUBJECT TO A NUMBER OF OPERATIONAL DISADVANTAGES. A NEW CONCEPT IN A CATHODE-DIAPHRAGM SEPARATOR WILL BE INTRODUCED AND ITS RAMIFICATIONS TO CELL OPERATION AND POWER SAVING ALONE AND IN COMBINATION WITH A SELF-ADJUSTING ANODES WILL BE DISCUSSED. OTHER NEW INNOVATIONS WILL BE DISCUSSED.

UNCLASSIFIED

PAGE 05 STATE 227775

4. FINNIGAN CORP., RECENT ADVANCES IN INSTRUMENTATION AND APPLICATIONS OF COMPUTERIZED GAS CHROMATOGRAPH/MASS SPECTROMETER SYSTEMS (TITLE). WITH THE ADVENT OF PRODUCTION-ENGINEERED QUADRUPOLE MASS SPECTROMETERS IN THE MID 1960'S, CAPABLE OF ON-LINE MARRIAGE TO THE GAS CHROMATOGRAPH, THE COMBINED INSTRUMENT (GC/MS) BECAME THE IDEAL SPECIFIC DETECTOR, ELIMINATING THE INADEQUACIES OF THE GC-ALONE INSTRUMENTS. TODAY, GC/MS IS APPLIED IN ALMOST EVERY BRANCH OF ORGANIC CHEMISTRY, ROUTINELY PROVIDING VERY SENSITIVE SEPARATIONS AND IDENTIFICATIONS; AND BY MEANS OF CHEMICAL IONIZATION (CI) AND SINGLE OR MULTIPLE ION MONITORING (MASS FRAGMENTOGRAPHY) TECHNIQUES, PICOGRAM

(10-12 GM) QUANTITATIVE ANALYSES ARE POSSIBLE. FOLLOWING THE MARRIAGE OF INEXPENSIVE AND EASILY USED INTERACTIVE DATA SYSTEMS WITH THE GC/MS, THE GC/MS/DATA SYSTEM HAS BECOME AN ESSENTIAL TOOL FOR RESEARCH AND QUALITY CONTROL IN PHARMACEUTICAL, PETROCHEMICAL, AND BIOMEDICAL LABORATORIES, INCLUDING THE ANALYSIS OF HAZARDOUS ENVIRONMENTAL CHEMICALS AND OTHER POLLUTANTS.

THE AUTHORS WILL DESCRIBE BRIEFLY THE THEORY OF QUADRUPOLE MASS SPECTROMETRY AND WILL DESCRIBE WITH THE HELP OF SLIDES THE MOST ADVANCED AUTOMATED GC/MS SYSTEMS AVAILABLE.

THE MAJOR PORTION OF THE SEMINAR WILL BE DEVOTED TO THE APPLICATION OF MANUAL AND AUTOMATED GC/MS SYSTEMS TO THE PHARMACEUTICAL, CHEMICAL AND PETROCHEMICAL FIELDS; PARTICULARLY AS THEY RELATE TO SOLVING ENVIRONMENTAL, TOXICOLOGICAL, AND QUALITY CONTROL PROBLEMS. TYPICAL APPLICATIONS WHICH WILL BE COVERED ARE NEXT DESCRIBED.

ANALYSIS AND QUANTITATIVE MEASUREMENT OF VINYL CHLORIDE AT THE FEW PPB (PARTS PER BILLION) LEVEL IN AIR FILTER

SAMPLES.

VINYL CHLORIDE, A STARTING MATERIAL IN POLYVINYL CHLORIDE
UNCLASSIFIED

PAGE 06 STATE 227775

(PVC) PLASTIC PRODUCTION, HAS BEEN LINKED TO LIVER
CANCER DEATHS AMONG PRODUCTION WORKERS. THIS HAS RESULTED
IN OSHA (OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION)
REGULATIONS LIMITING VINYL CHLORIDE LEVELS TO 1 PPM
AVERAGED OVER AN 8-HOUR PERIOD. ANALYSIS OF AIR FILTER
SAMPLES HAS BEEN CARRIED OUT USING GC/MASS FRAGMENTOGRA-
PHY. THE TECHNIQUE PROVIDES MORE SPECIFICITY AND A SIG-
NIFICANT (10 TO 20 TIMES) INCREASE IN SENSITIVITY OVER
CONVENTIONAL GC TECHNIQUES.

DETERMINATION OF PROPOXYPHENE AND NORPROPOXYPHENE BY
CHEMICAL IONIZATION MASS FRAGMENTOGRAPHY.

THE KINETICS OF PROPOXYPHENE AND ITS PRIMARY NORPROPOXY-
PHENE, HAVE BEEN SIMULTANEOUSLY RE-EVALUATED IN HUMANS
USING GC/MS DEUTERIUM-LABELED STANDARDS AND MASS FRAG-
MENTOGRAPHY. PLASMA CONCENTRATIONS IN FOUR VOLUNTEERS
DETERMINED FOR AS LONG AS 240 HOURS AFTER SINGLE ORAL
DOSES OF TWO PROPOXYPHENE SALES ARE USED TO DETERMINE THE
HALF LIFE OF PROPOXYPHENE TO BE 12 HOURS AND NORPROPOXY-
PHENE TO BE 37 HOURS.

ANALYSIS AND QUANTITATIVE DETERMINATIONS OF SUSPECTED
CARCINOGENS IN DRINKING WATER.

DURING RECENT MONTHS OSHA HAS ESTABLISHED MINIMUM SAFE
LEVELS FOR BIS (CHLOROETHYL) ETHER (BCEE) AND BIS (CHLO-
ROISOPROPYL) ETHER (OCIE) WHICH ARE HOMOLOGS OF THE
POTENT LUNG CANCER AGENT BIS (CHLOROMETHYL) ETHER (BCME).
BOTH ARE BY-PRODUCTS IN CHEMICAL MANUFACTURING PROCESSES
AND HAVE BEEN FOUND IN GROUND AND RIVER WATER. AGAIN,

MASS FRAGMENTOGRAPHY WAS FOUND TO BE THE METHOD OF CHOICE
FOR HIGH SPECIFICITY AND REQUIRE SENSITIVITY OF 10 PPB
AND BELOW.

GC/MS TECHNIQUES FOR DETERMINATIONS OF INTERFERENCES IN
PESTICIDE ANALYSIS.

SOME OF THE RECENT CHEMICALS FOUND IN THE ENVIRONMENT ARE
THE POLY-CHLORINATED BIPHENYLS (PCB'S). THESE INDUSTRIAL
UNCLASSIFIED

PAGE 07 STATE 227775

COMPOUNDS ARE STRUCTURALLY SIMILAR TO THE CHLORI-
NATED HYDROCARBON PESTICIDES AND THUS MAY INTERFERE WITH

QUALITATIVE ELECTRON CAPTURE ANALYSIS OF THE PESTICIDES.

GC/MS ENABLES THE QUALITATIVE AND QUANTITATIVE ANALYSIS WITHOUT COLUMN CHROMATOGRAPHY OR COMPLETE SEPARATION ON A GC COLUMN. RESULTS WILL BE PRESENTED SHOWING THE QUANTITATIVE ANALYSIS BY MASS FRAGMENTOGRAPHY OF 1 TO 2 NANOGRAMS OF (P,P') DDT AND (P,P') DDE IN THE PRESENCE OF MUCH LARGER AMOUNTS OF CO-ELUTING PCB'S.

THE APPLICATION OF GC/MS TO THE ABOVE PROBLEMS HAS UNIQUELY SOLVED BOTH THE SENSITIVITY AND IDENTIFICATION PROBLEMS PRESENT. WHEN OPERATED IN THE NORMAL SCANNING MODE, A GC/MS PROVIDES VALUABLE STRUCTURAL INFORMATION AND SENSITIVITY EQUIVALENT TO A STANDARD FLAME IONIZATION DETECTOR. WHEN OPERATED IN THE MASS FRAGMENTOGRAPHY MODE, A GC/MS SYSTEM PROVIDES VERY SPECIFIC AND QUANTITATIVE INFORMATION AT A SENSITIVITY LEVEL WHICH OFTEN SURPASSES THAT OF THE ELECTRON CAPTURE DETECTOR.

5. UOP PROCESS DIVISION, OPTIMIZING AN AROMATICS COMPLEX. THE TREMENDOUS GROWTH OF THE PETROCHEMICAL INDUSTRY HAS NECESSITATED VERY CAREFUL EXAMINATION OF THE MOST ECONOMIC DISPOSITION OF THE VARIOUS COMPONENTS FOUND IN OIL REFINERY STREAMS. THESE COMPONENTS CONSTITUTE THE BASIC BUILDING BLOCKS FOR PETROCHEMICALS.

THIS PAPER FOCUSES ON A SINGLE BUT VERY SIGNIFICANT SEGMENT OF THE VAST PETROCHEMICAL MAZE -- THE PRODUCTION OF LIGHT AROMATICS, SPECIFICALLY BENZENE AND THE XYLENES. AN ECONOMIC EVALUATION IS PERFORMED ON A SCHEME FOR THE CO-PRODUCTION OF BENZENE, O-XYLENE AND P-XYLENE FROM NAPHTHA. OPTIMIZATION WITHIN THIS SCHEME IS INVESTIGATED AS MARKET PRICES ARE VARIED. THE PROCESSES UTILIZED IN THIS EVALUATION (CATALYTIC REFORMING, AROMATICS EXTRACTION, HYDRODEALKYLATION, TRANSALKYLATION, P-XYLENE SEPARATION AND XYLENE ISOMERIZATION) ARE DISCUSSED BRIEFLY TO PROVIDE ADEQUATE BACKGROUND TO UNDERSTAND THE INTERRE-

UNCLASSIFIED

PAGE 08 STATE 227775

LATIONSHIPS INFLUENCING THE ECONOMICS. ROBINSON

UNCLASSIFIED

<< END OF DOCUMENT >>

Message Attributes

Automatic Decaptioning: X
Capture Date: 26 AUG 1999
Channel Indicators: n/a
Current Classification: UNCLASSIFIED
Concepts: n/a
Control Number: n/a
Copy: SINGLE
Draft Date: 24 SEP 1975
Decaption Date: 01 JAN 1960
Decaption Note:
Disposition Action: n/a
Disposition Approved on Date:
Disposition Authority: n/a
Disposition Case Number: n/a
Disposition Comment:
Disposition Date: 01 JAN 1960
Disposition Event:
Disposition History: n/a
Disposition Reason:
Disposition Remarks:
Document Number: 1975STATE227775
Document Source: ADS
Document Unique ID: 00
Drafter: COM/BEWT/TPD/562/MGOODWIN/SB
Enclosure: n/a
Executive Order: N/A
Errors: n/a
Film Number: D750331-0573
From: STATE
Handling Restrictions: n/a
Image Path:
ISecure: 1
Legacy Key: link1975/newtext/t197509106/baaaacmh.tel
Line Count: 315
Locator: TEXT ON-LINE, TEXT ON MICROFILM
Office: ORIGIN COME
Original Classification: UNCLASSIFIED
Original Handling Restrictions: n/a
Original Previous Classification: n/a
Original Previous Handling Restrictions: n/a
Page Count: 6
Previous Channel Indicators:
Previous Classification: n/a
Previous Handling Restrictions: n/a
Reference: n/a
Review Action: RELEASED, APPROVED
Review Authority: RowellE0
Review Comment: n/a
Review Content Flags:
Review Date: 11 JUN 2003
Review Event:
Review Exemptions: n/a
Review History: RELEASED <11 JUN 2003 by MaustMC>; APPROVED <10 FEB 2004 by RowellE0>
Review Markings:

Margaret P. Grafeld
Declassified/Released
US Department of State
EO Systematic Review
06 JUL 2006

Review Media Identifier:
Review Referrals: n/a
Review Release Date: n/a
Review Release Event: n/a
Review Transfer Date:
Review Withdrawn Fields: n/a
Secure: OPEN
Status: NATIVE
Subject: n/a
TAGS: BEXP, GC
To: BERLIN INFO BUCHAREST
BUDAPEST
VIENNA
Type: TE
Markings: Margaret P. Grafeld Declassified/Released US Department of State EO Systematic Review 06 JUL 2006